

## PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

**A Composition for Producing a Potable Brew from Leguminous Plants**

(A Communication from Abroad from WILLIAM R. GRAHAM JR. A British Subject of 2245 West 63rd St., Kansas City (Johnson County), Kansas, United States of America, and CLARK W. McCARTY, a Citizen of the United States of America, of 225 East 31st Street, Kansas City (Jackson County) Missouri, United States of America.)

- 10 I. HENRY WITHERS KICKWEED JENNINGS, a British Subject, of 51 and 52 Chancery Lane, London, W.C.2, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

20 This invention relates to a composition for use in producing a dark coloured potable brew, and to a method of making the composition and a potable brew obtained therefrom.

25 It has been found that an excellent tasting beverage may be prepared from leguminous plants, for example alfalfa, clover, lespedeza, pea vines and the like, if they are properly treated and dried.

30 According to the invention, the leguminous plants, preferably after being crushed, are allowed to ferment, and are then dried at a temperature sufficient to destroy or partially destroy the chlorophyll but insufficient to char the organic material. The duration of the fermentation 35 will usually be from about 30 minutes to three days, depending on the flavour desired.

To produce a palatable beverage the dried product is boiled or steeped in water.

40 The flavour of the beverage is largely dependent on the period of fermentation, while, owing to the substantial destruction of the chlorophyll, a distinctive and tasty dark coloured beverage will be produced.

45 The dried composition can be stored without danger of fermentation or decomposition, so that it can be used when required to produce a beverage.

50 In order that the invention may be easily understood and readily carried into effect, the following detailed description of methods of preparing the composition is given by way of example.

55 The leaves of a selected leguminous

[Price 1/-]

plant are crushed in any suitable manner to break down the cells of the leaves. It is desirable, however, that the crushing operation be performed, so far as possible, without destroying the entity or character of the leaves. 60

After the leaves have been sufficiently crushed or broken, they are placed in a container and permitted to ferment for a period of from thirty minutes to three 65 days. When the cells of the leaves are broken down, the plant enzymes and other cellular content are released. The bacteria on the plant, together with the enzymes, bring about fermentation. The 70 fermentation may be stopped at any time by application of heat. Inasmuch as the flavour of the beverage made from the resulting product is largely dependent upon the period of fermentation, this period is varied in accordance with the particular 75 taste the product is to have. After the fermentation has proceeded for a selected interval, the leaves are dried to the extent that the chlorophyll content is destroyed or substantially destroyed but without 80 appreciable charring of the organic material. Most enzymes are sensitive to an elevation of temperature and are said to be thermo-labile. Therefore, the final 85 drying should be at a temperature sufficient to destroy the enzymes and stop fermentation. A temperature of between 150°F. and 500°F is suitable for most leguminous plants and this temperature 90 should be sustained for a length of time sufficient to drive off the water in the leaves and to substantially destroy the chlorophyll content of the leaves. By 95 destroying or substantially destroying the chlorophyll content, a dark colored brew is produced from the composition. It is important, of course, that the temperature be controlled so as not to char the organic material in the leaves. 100

If desired, the leaves may be subjected to a preliminary drying before being crushed. Inasmuch as the enzymes are destroyed by elevated temperatures, the preliminary drying or "wilting" is 105 usually conducted at room temperatures and under either normal or reduced pressure. The purpose of the preliminary drying is to remove some of the water from the leaves before they are crushed. 110

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As an example of a typical operation, red clover leaves were wilted for eighteen hours at room temperature (70°—75°F.).

After wilting, the clover leaves were passed through rollers to break down the cell structure. During the rolling operation, the leaves have a tendency to darken in color and develop a moist slippery feel.

The mat of rolled clover leaves was then put in an incubator and held at a temperature of 65°F. to 70°F. for seven hours during which time fermentation took place, probably due to enzymatic and bacterial action. This fermentation was terminated at a time when a pleasant aroma had developed in the mat. The period necessary to develop the aroma had been determined by a series of tests and experimental work. It was found that the aroma

usually begins to develop during the first hour of incubation and increases for a period of time. This pleasant aroma, after its initial generation, continues to develop for a period and then becomes unpleasant.

The fermentation time of seven hours was selected because at the end of this period a desirable product was obtained.

On removal from the incubator, the mat of clover leaves was placed in an oven and heated to a temperature of 280°F. until the mat was dry. During this heating the mat turned from a dark green to a brown or brownish-black at which time it was removed and disintegrated by rolling or crushing. The color and, to an extent, the taste of the brew produced is controlled by the time and temperature of the final heat treatment.

The product when steeped or boiled in water produces a clear brownish amber fluid having a pleasant aroma and taste.

Having now particularly described and ascertained the nature of my said inven-

tion and in what manner the same is to be performed I declare that what I claim is:—

1. A method of making a composition for use in producing a dark-coloured potable beverage, according to which leguminous plants, for example alfalfa, clover, pea vines and the like, preferably after being crushed, are allowed to ferment and are then dried at a temperature sufficient to destroy or partially destroy the chlorophyll but insufficient to char the organic material.

2. A method in accordance with claim 1, in which the fermentation is allowed to proceed for a period of about 30 minutes to three days, depending on the flavour desired.

3. A method in accordance with claim 1 or claim 2, in which the final drying is carried out at a temperature of 150°—500°F.

4. A method in accordance with claim 1, 2 or 3, in which the plants are wilted at a relatively low temperature before being crushed.

5. A composition made by a method claimed in any of the preceding claims.

6. A dark-coloured potable beverage produced from a composition made by a method claimed in any of the claims 1 to 4 by boiling or steeping the composition in water.

7. A composition and a potable beverage obtained therefrom substantially as described.

Dated this 2nd day of April, 1942.

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